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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 011204

Application Number: 09/768,733
Filing Date: January 24, 2001
Appellant(s): ZEUTHEN ET AL.

Stephen A. Soffen
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on November 6, 2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejection of claims 1-8 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,040,944	KELLEY ET AL.	08-1977
3,691,060	INWOOD	09-1972

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

Claims 1, 3, and 5-8 stand rejected under 35 U.S.C. 102(b) as being anticipated by Kelley et al. (US 4,040,944).

The Kelley reference discloses a hydrocarbon conversion process in which a feed is first subjected to catalytic hydrofining (i.e., hydrotreating) to reduce the sulfur and nitrogen contents to a desired level. The hydrotreated effluent that contains hydrogen sulfide and hydrogen may then be cooled and is then hydrotreated over a hydrotreating catalyst at conditions that are effective for the partial hydrogenation of polyaromatics. Partial hydrogenation of polyaromatics

would necessarily produce some mono-aromatic hydrocarbons. The resulting effluent is then introduced into an FCC unit to produce gasoline. The feed, as shown in the examples, boils within the claimed range. In the examples, the feed has a 50% boiling point of 818°F (437°C). The temperatures in the first and second hydrotreating zones range from 650° to 875°F (343° to 468°C) and the LHSV ranges from 0.2 to 10 in the first zone and ranges from 0.5 to 15 in the second zone. Examples 2 and 3 disclose LHSV values for the second hydrotreating zone that are more than 2 times the values for the first zone. The catalyst used in the second hydrotreating zone comprises a Group VIII metal such as nickel and a Group VI metal such as molybdenum or tungsten on a refractory inorganic oxide. The examples utilize a catalyst that contains nickel and molybdenum. The catalyst may contain alumina or silica-alumina, which may contain hydrogenating metals. See col. 2, lines 24-68; col. 3, lines 1-15 and 51-68; col. 4, lines 1-64; col. 5, lines 57-68; col. 6, lines 1-68; col. 7, lines 1-20 and 56-68; col. 8, lines 8-23; and the examples.

Claim Rejections - 35 USC § 103

Claim 2 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley et al. (US 4,040,944).

The Kelley reference discloses a hydrocarbon conversion process in which a feed is first subjected to catalytic hydrofining (i.e., hydrotreating) to reduce the sulfur and nitrogen contents to a desired level. The hydrotreated effluent that contains hydrogen sulfide and hydrogen may then be cooled and is then hydrotreated over a hydrotreating catalyst at conditions that are effective for the partial hydrogenation of polyaromatics. Partial hydrogenation of polyaromatics

would necessarily produce some mono-aromatic hydrocarbons. The resulting effluent is then introduced into an FCC unit to produce gasoline. The feed, as shown in the examples, boils within the claimed range. In the examples, the feed has a 50% boiling point of 818°F (437°C). The temperatures in the first and second hydrotreating zones range from 650° to 875°F (343° to 468°C) and the LHSV ranges from 0.2 to 10 in the first zone and ranges from 0.5 to 15 in the second zone. Examples 2 and 3 disclose LHSV values for the second hydrotreating zone that are more than 2 times the values for the first zone. The catalyst used in the second hydrotreating zone comprises a Group VIII metal such as nickel and a Group VI metal such as molybdenum or tungsten on a refractory inorganic oxide. The examples utilize a catalyst that contains nickel and molybdenum. The catalyst may contain alumina or silica-alumina, which may contain hydrogenating metals. See col. 2, lines 24-68; col. 3, lines 1-15 and 51-68; col. 4, lines 1-64; col. 5, lines 57-68; col. 6, lines 1-68; col. 7, lines 1-20 and 56-68; col. 8, lines 8-23; and the examples.

The Kelley reference does not disclose that the temperature in step (c) is between 50° and 150°C lower than the outlet temperature of step (a).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Kelley by utilizing a temperature in step (c) that is between 50° and 150°C lower than the outlet temperature of step (a) because the disclosed temperature ranges for each zone permit temperature differences within the claimed range and because Kelley discloses that the second hydrotreater can be operated at substantially reduced temperatures as compared to the first hydrotreater. Therefore, one having ordinary skill in the art

would expect that utilizing temperature differences within the claimed range in the process of Kelley would result in effective hydroconversion.

Claim 4 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley et al. (US 4,040,944) as applied to claim 1 above, and further in view of Inwood (US 3,691,060).

As discussed above, the Kelley reference does not disclose a process wherein the second step is performed in a final catalyst bed of the hydrotreating zone.

Inwood discloses that hydrogenation processes that employ two catalysts can equivalently use two separate reactors or a single reactor in which the two catalysts are disposed. See col. 2, lines 17-30.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Kelley by utilizing one reactor in which both catalysts are disposed thereby resulting in a final catalyst bed containing the second zone catalyst as suggested by Inwood because it is more economical to employ a single reactor.

(11) Response to Argument

Appellants argue that the Kelley reference fails to teach or suggest a "process for reducing content of sulphur compounds and polyaromatic hydrocarbons in a hydrocarbon feed stock" by *inter alia* "contacting the feed stock with hydrogen over a hydrotreating catalyst at conditions being effective for hydrotreating and obtaining a hydrotreated effluent" and "cooling the hydrotreating effluent" as independent claim 1 recites. Specifically, appellants argue that the Kelley reference is silent about "cooling the hydrotreated effluent" subsequent to "contacting the feed stock with hydrogen ...for hydrotreating and obtaining a hydrotreated effluent" and before

"contacting the cooled hydrotreated effluent with a hydrotreating catalyst at conditions being effective for conversion of polyaromatic hydrocarbons to monoaromatic compounds as independent claim 1 recites. These arguments are not persuasive for the following reasons.

While it is clear that Kelley discloses that the process can be operated without intervening cooling, condensation, or separation of ammonia and hydrogen sulfide (see column 4, lines 26-30), Kelley also discloses that an intervening treatment of the hydrofiner effluent can be performed to remove ammonia and hydrogen sulfide. See column 6, lines 25-36. One of ordinary skill in the art reading these two sections would realize that an intervening cooling step can be applied. Additionally, the disclosure that the hydrocracker can be operated at substantially reduced temperatures indicates that cooling can be performed. The examiner asserts that the teaching in column 6, lines 25-36 combines the disclosed intervening treatment with the operation of the hydrocracker at reduced temperatures since Kelley uses the expression "in this case". This would mean that, with an intervening treatment (i.e., cooling), the hydrocracker is operated at reduced temperatures.

Appellants' reliance upon the teaching in Kelley in column 4, lines 26-30, that the total effluent from the hydrofiner 10 is transferred to hydrocracker 12 via line 14, without intervening cooling as providing evidence that Kelley teaches against the intermediate cooling step is not persuasive because that section describes only one embodiment of the process and the Kelley reference is not limited solely to that one disclosed embodiment. As stated above, Kelley also discloses in column 6, lines 25-36, that intervening treatments such as condensation, which would necessarily involve cooling, can be performed.

Likewise, appellants' reliance upon the hydrofining and hydrocracking conditions in the tables in column 4 as providing evidence that the hydrofining and hydrocracking zones are operated at constant temperatures is not persuasive. While the temperature ranges are the same, there is nothing in the tables that says the hydrofining and hydrocracking zones need to be operated at the same temperature.

Regardless of what specific embodiments are presented in the Kelley reference, nothing is presented that would negate the teaching in column 6, lines 25-36, in Kelley that intervening treatments can be performed.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,
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Primary Examiner
Art Unit 1764

WG
January 12, 2004

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